

Our Case: 10346ROUS01U

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: David MacDonald DELANEY et al

Serial No: 09/270,733 Examiner: Kevin C. HARPER

Filed: 16 March 1999 Group Art Unit: 2879

Subject: VIRTUAL PRIVATE NETWORKS AND METHODS FOR
THEIR OPERATION

Marked-Up Version of Claims

32. (Amended) A routing device for a communications network
[as defined in claim 28,] comprising:

a plurality of distinct subsets of virtual ports, no virtual port
belonging to more than one of the distinct subsets, each distinct subset being
a subset of a respective distinct set of virtual ports of the network and each
distinct set being assigned a respective distinct broadcast address;

a respective address assigner for each distinct subset of virtual
ports, each address assigner being connected [between] to its respective
distinct subset of virtual ports and [a router of the routing device] being
operable:

to assign a respective egress address to each packet entering the
network via an ingress virtual port of the routing device, the respective egress
address corresponding to a respective destination address of the entering
packet when a correspondence between the destination address and an
egress address is known, and the respective egress address being a
broadcast egress address corresponding to the set of comprising the ingress
virtual port when no correspondence between the destination address and an
egress address is known; and

to assign a respective ingress address to each packet entering the network, the respective ingress address corresponding to the ingress virtual port via which the packet enters the network;
each address assigner comprising:

an encapsulator for adding to each packet entering the network via an ingress virtual port the respective egress address and the respective ingress address assigned to that packet to provide a corresponding encapsulated packet; and

a decapsulator for removing from each encapsulated packet received at an egress virtual port of the network the egress address assigned to that packet to provide a decapsulated packet; and
at least one router connected to the address assigners and operable to route the packet according to the egress address, said routing being restricted to virtual ports belonging to the distinct set of virtual ports which includes the ingress virtual port.

41. (Amended) A method [as defined in claim 8, further] of routing packets through a communications network having a plurality of distinct sets of virtual ports, no virtual port belonging to more than one of the distinct sets, a respective distinct broadcast address being assigned to each distinct set of virtual ports, the method comprising:

assigning a respective egress address to each packet entering the network via an ingress virtual port, the respective egress address corresponding to a respective destination address of the entering packet when a correspondence between the destination address and an egress address is known, and the respective egress address being a broadcast address corresponding to the set comprising the ingress virtual port when no correspondence between the destination address and an egress address is known;

routing the packet according to the respective egress address, said routing being restricted to virtual ports belonging to the distinct set of virtual ports which includes the ingress virtual port; and

routing an encapsulated packet received from the [router] network to an address assigner selected according to the ingress address and the egress address of the encapsulated packet such that all encapsulated packets having a common egress address and an Ingress address corresponding to a virtual port in a particular set of the distinct sets of virtual ports are routed to an address assigner associated with that egress address and that particular distinct set of virtual ports.